

H on the node X **511** and the node Z **531** to the caller. The reason is that the data G1 and the data H1 are the same data as each of the data G and the data H.

**[0085]** FIG. 7 is an example of data referred in some embodiments of the present invention. FIG. 8 is an example of data in which a storage region is set for the data of FIG. 7.

**[0086]** Referring to FIG. 7, the data **700** is an example of a data table used for management of members of a company. The data **700** are data of a matrix structure that has an employee number, an ID, a name, a gender, an age, a team and a position of the members of the company in a column, and has each content in a row. As referred in the description of FIG. 5, the data **700** may be distributed and stored in each node, by the control unit **700**. In particular, each of some data distributed and stored in each node may be distributed and stored in a logically partitioned region on each node, based on a preset criterion.

**[0087]** The control unit **140** may classify and store the data **700** based on the preset criterion. The preset criterion may be determined by the administrator of the in-memory database. Referring to the data **700**, since the gender, the position and the team of the members are often common, the data cannot be determined on the basis of this. Although a case where the age and name are common in the data **700** is not illustrated, a member having a common name and age may exist in the omitted portion. Meanwhile, a target with a unique value capable of differentiating each of some data from other data, such as an ID and an employee number, may be determined on the basis of the above criterion. Hereinafter, the description will be given of a case where some data are distributed and stored on the basis of the employee number.

**[0088]** Referring to FIG. 8, the numbers are specified so that each of the employee numbers of the data **800** is stored in the logical region described in FIG. 5 on the basis of a cycle of sixteen. That is, the storage regions of each employee number are determined by the remainder that remains after divided by the number 16 of the logical regions (**503, 505, 507, 509, 513, 515, 517, 519, 523, 525, 527, 529, 533, 535, 537** and **539**). For example, when the employee number 1 is divided by 16, the remainder is 1, and thus, the first region **503** may be determined as the storage region. In addition, when the employee number 2 is divided by 16, the remainder is 2, and thus, the second region **505** may be determined as the storage region. In the case of the employee number 16, when it is divided by 16, the remainder is 0. Thus, the number is specified as 0, and the sixteenth region **539** may be determined as the storage region.

**[0089]** Subsequently, when the employee number 17 is divided by 16, the remainder is 1, the number is specified as 1\_1, and the first region **503** may be determined as the storage region. In addition, when the employee number 18 is divided by 16, the remainder is 2. Thus, the number is specified as 1\_2, and the second region **505** may be determined as the storage region. Next, when the employee number 32 is divided by 16, the remainder is 0. Thus, the number is specified as 1\_0, and the sixteenth region **539** may be determined as the storage region. Moreover, when the employee number 33 is divided by 16, the remainder is 1. Thus, the number is specified as 2\_1, and the first region **503** may be determined as the storage space. The control unit **140** may perform control so that some data are stored in the storage space determined in this way, based on the employee

numbers. That is, in the region **503**, data of an ID **A1** of the employee number 1, a name Hong Gil-Dong, a gender man, an age 27, a team development 1 and a position employee may be stored.

**[0090]** FIG. 9 is an exemplary diagram for explaining a method for storing data according to the setting of FIG. 8. FIG. 9 illustrates a case where the control unit **140** stores the data **800** on the basis of the stored procedure **900** as an example.

**[0091]** Referring to FIG. 9, the control unit **140** may perform control so that the data corresponding to the employee numbers are stored in each logical region on multiple nodes in a numerical order that is referred in the description of FIG. 8. For example, the control unit **140** may perform control so that some data with employee numbers corresponding to the numbers 1, 1\_1, 2\_1 and the like are stored in some region **910** of the region **503**. Each of some data of the data **800** in which the remainder has other numbers may be stored in the remaining regions (**505, 507, 509, 513, 515, 517, 519, 523, 525, 527, 529, 533, 535, 537** and **539**) on the nodes. At this time, the control unit **140** may be stored in the regions **930, 950** and **970** of the respective logical regions of some data.

**[0092]** The control unit **140** may store the duplicated data in regions other than the region on the logical regions **910, 930, 950** and **970**. That is, when the value of replication factor is 1, each of the logical regions (**503, 505, 507, 509, 513, 515, 517, 519, 523, 525, 527, 529, 533, 535, 537** and **539**) may be divided into regions **910, 930, 950** and **970** for storing the data, and regions **920, 940, 960** and **980** for storing the duplicated data.

**[0093]** Referring to the node W (**501**), some data with the remainder of 1, 2, 3 and 4 are stored in the region **910** of the regions **503, 505, 507** and **509**, and the some data with the remainder of 13, 14, 15 and 0 are stored in the region **920** of the regions **503, 505, 507** and **509**.

**[0094]** Referring to the node X (**511**), some data with the remainder of 5, 6, 7 and 8 are stored in the region **910** of the regions **513, 515, 517** and **519**, and some data with the remainder of 9, 10, 11 and 12 are stored in the region **920** of the regions **513, 515, 517** and **519**.

**[0095]** Referring to the node X (**521**), some data with the remainder of 9, 10, 11 and 12 are stored in the region **910** of the regions **523, 525, 527** and **529**, and some data with the remainder of 5, 6, 7 and 8 are stored in the region **920** of the regions **523, 525, 527** and **529**.

**[0096]** Referring to the node X (**531**), some data with the remainder of 13, 14, 15 and 0 are stored in the region **910** of the regions **533, 535, 537** and **539**, and some data with the remainder of 1, 2, 3 and 4 are stored in the region **920** of the regions **533, 535, 537** and **539**.

**[0097]** The control unit **140** may delete one of the data of the regions **910, 930, 950** and **970** or the data of the regions **920, 940, 960** and **970**, when the value of replication factor decreases from 1 to 0. Thus, even when the value of replication factor decreases, one of the data and the duplicated data may be reserved in the database **120**.

**[0098]** FIG. 10 is an exemplary diagram for explaining a database in which the duplicated data is deleted according to still another embodiment of the present invention. FIG. 10 illustrates a case where the control unit **140** deletes the duplicated data of the data **800** depending on the stored procedure **1000**.